Title Physiological and structural changes during ripening and deastringency treatment of persimmon fruit cv. 'Rojo Brillante'

Author A. Salvador, L. Arnal, C. Besada, V. Larrea, A. Quiles and I. Pérez-Munuera

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Abstract

The aim of this study was to evaluate the changes in physicochemical properties together with the structural changes that occur during the period of harvesting 'Rojo Brillante' persimmon fruit, and the effect of the deastringency treatment on these properties. Fruit were harvested at different stages of maturation and the treated to remove astringency (95% CO_2 for 24 h at 20 °C, 90% R.H.). Just after harvest and following the subsequent deastringency treatment, physiological and microstructural changes were evaluated. Measurements of external colour, flesh firmness, pectinmethylesterase and polygalacturonase activity, astringency level as soluble tannins and sensory evaluation, acetaldehyde production, total soluble solids, pH and ethylene production were made. Microstructural changes were evaluated by Cryo Scanning Electron Microscopy. Firmness loss during fruit maturity, concomitant with an increase in external colour, was related to changes in cell structure. Although 'Rojo Brillante' fruit produce a small amount of ethylene during ripening, the change in ethylene production reflects the typical climacteric behaviour of this cultivar. The high concentrations of CO_2 tested to eliminate astringency proved effective for all stages of maturity and are related to the reduction in soluble tannin content and with the appearance of insoluble material inside the vacuoles of some tannic cells.